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He maintains that after taking into consideration the studies and observations of MARSHALL WARD and PLOWRIGHT in England; MCALPINE and COBB in Australia; BOLLEY, HITCHCOCK, and CARLETON in North America; BARCLAY in India; KLEBAHN, DIETEL, SCHROETER, and MAGNUS in Germany; LAGERHEIM in Sweden, and others, the wintering of the uredo-bearing mycelium, or of the uredospores, so as to be a source of infection for the coming season, has not been proven. The evidence, chiefly as brought forward by KLEBAHN, to show that the first appearance of the rust in spring can often be accounted for by uredospores being carried long distances by the wind, is reviewed, and the conclusion reached that this is an assumption based on no direct evidence and highly improbable.

The author then enters upon the vital part of the subject and discusses the mycoplasm theory and its recent criticism, especially that which has been most ably presented by KLEBAHN and MARSHALL WARD. After an extended examination of the works of these authors, he finds that his theory has not been affected. He directs attention to a report by BIFFEN of recent experiments in hybridizing wheat carried on at Cambridge, England, in which the appearance of rust on the plants can best be explained by assuming that the mycoplasm of certain varieties was transmitted through the pollen to the resulting hybrid.

—J. C. ARTHUR.

Gynodioecism.—CORRENS⁷ has presented a second⁸ report on the gynodioecism of *Satureia hortensis* and *Silene inflata*, giving full confirmation of his earlier conclusion that the pistillate form produces only, or mostly, pistillate offspring when fertilized, as it must be, by the bisporangiate form. If the pistillate form is a mutant from the bisporangiate and differs from the latter by the possession of a distinct hereditary unit, as suggested by Burck,⁹ all the seeds produced by a pistillate plant are of hybrid origin, and the observed facts would be best explained as a case of dominance of the newly risen character over the older. In *Satureia* this dominance (?) is complete, but in *Silene* the offspring of the pistillate plants were pistillate in only 87–93 per cent., the rest being bisporangiate. Although this behavior looks very much like Mendelian inheritance, a number of cases are cited in which quite contradictory results have been obtained, so that while the author states it as a law that each sex has a tendency to transmit its own sex form, he does not look upon this as dominance in the Mendelian sense.—GEORGE H. SHULL.

An ear of corn.—The origin of such economic plants as wheat and maize, which have a wide distribution in cultivation but are unknown in the native

⁷ See BOT. GAZETTE 39:304. Ap. 1905.

⁸ CORRENS, C., Weitere Untersuchungen über die Gynodioecie. Ber. Deutsch. Bot. Gesell. 23:452–463. 1905.

⁹ BURCK, W., Die Mutation als Ursache der Kleistogamie. Recueil Trav. bot. Néerl. 1-2:95 sqq. 1905.

state will doubtless always be an interesting subject for speculation. The most satisfactory hypothesis for the origin of maize, and that which has been until this time rather generally accepted, derives it from the teosinte (*Euchlaena*). It has been thought that the ear was formed by an abnormal coalescence of the pistillate spikes of that plant. The ease with which maize and teosinte may be crossed gives strong support to the theory that they are nearly related.

An altogether different view of the origin of the pistillate spike of maize is presented by MONTGOMERY¹⁰ and much evidence is given in its support. His hypotheses are that the ear of corn is the homologue of the central spike of the staminate inflorescence; and that the progenitor of maize was a much branched plant, bearing only terminal branched inflorescences of bisporangiate flowers. The chief support of these hypotheses is derived from abnormal development of pistillate and bisporangiate flowers in the staminate inflorescence, and *vice versa*. A number of photographs show these abnormalities and *fig. 14* represents a plant, denuded of its leaves, showing that the same number of internodes intervene between the central axis and the ear as are found between the ear and the tassel. Nothing in this new interpretation of the pistillate spike of maize need lessen the conviction of its near relationship with *Euchlaena*.—GEORGE H. SHULL.

The laws of inheritance.—CORRENS¹¹ has published a lecture on the laws of inheritance which presents in a very satisfactory manner the recent advances which have been made in this discipline. He would include in hybridization every union between two germ-cells having one or more different character-units. The laws of dominance and of the purity of the parental gametes are illustrated from his own experiments on *Urtica*, *Mirabilis*, and *Zea*, and emphasis is given to the fact that these two laws are absolutely unrelated to each other, and that reference to them jointly as Mendel's Law is misleading.

Latency is considered at some length, but the present state of knowledge of this subject leaves much to be desired. He makes a proper distinction between latency in the sense of invisibility, and *true* latency in which there is actual inactivity of a unit that may be changed at times from a passive to an active state.

Regarding the relation between MENDEL's and GALTON's laws, he holds with DARBISHIRE,¹² that both are correct and the antagonism only apparent, due to the different manipulation of the data.

CORRENS still maintains that sex is fundamentally unlike the unit-characters which behave in accord with MENDEL's laws. Touching on xenia and tel-

¹⁰ MONTGOMERY, E. G., What is an ear of corn? *Popular Sci. Monthly* **68**: 55-62. *figs. 14*, Jan. 1906.

¹¹ CORRENS, C., *Ueber Vererbungsgesetze*. 8vo. pp. 43. *figs. 4*. Berlin: Gebr. Borntraeger. 1905.

¹² DARBISHIRE, A. D., On the supposed antagonism of Mendelian to biometric theories of heredity. *Mem. and Proc. Manchester Lit. and Philos. Soc.* **49**. no. 6. 1905. 19 pp.